An Interdisciplinary Analysis of MULTISPECTRAL SATELLITE Data for Selected Cover Types in the Colorado Mountains, Using Automatic Data Processing Techniques.

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Monthly Progress Report

MONTHLY PROGRESS REPORT
For December 1973

A. Overall Status and Progress to Date

A.1 Since the S-192 data tapes are not expected until mid-April, 1974, plans will be initiated to shift project personnel to other LARS projects and thereby extend the project three to four months past the original deadline of May 31, 1974.

A.2 An initial non-supervised classification of Mesa Verde National Park was performed with ERTS MSS data (frame 1317-17204, 5 June 1973) so a comparison can be made when SKYLAB data is received. The classification, using 15 classes, showed an area on the southeast boundary of the park to be spectrally unique. This area was identified as the Moccasin Mesa Fire of June 1973.

An attempt was made to select training fields such that:

(1) The total actual burned acreage could be reliably estimated and,

(2) Several classes of burn severity could be delineated within the area.

These two types of information are extremely valuable to forest managers in planning regeneration efforts and in allocation of fire suppression costs.

Training fields were selected and refined, and a second classification was made in the Moccasin Mesa area. Spectral classes were combined so that the final map indicated five categories of cover type:

A. Unburned	(1) Canyon Vegetation (2) Mesa Vegetation
B. Burned	(1) Severe (2) Moderate (3) Light

Assignment of cover type names was made with the aid of SKYLAB S190A and S190B photography.

In the present classification a small number of isolated anomalies are present. These are points outside the burned area which are being classified as one of the burn severity classes. The next step

in the analysis will be an attempt to identify these points and to determine their spectral separability from the three burn severity classes, so that a more accurate final classification may be completed.

A.3 Vegetation cover type mapping is continuing in the areas surrounding the SL-2 and SL-3 sites by INSTAAR. The dynamic nature of vegetative response to gradient, slope and aspect necessitates mapping an area larger than the designated sites. This provides a broader base for ecological interpretation and possible geobotanical correlations. Currently, the following U.S.G.S. quadrangles around the SL-2 site are being mapped.

Monument Hill	Vallecito Reservoir
Durango West	Ludwig Mt.
Hermosa	Granite Peak
Durango East	Baldy Mt.
Lemon Reservoir	Bear Mt.
Rules Hill	Devil Mt.

The INSTAAR research team has developed the methodology for preparing these vegetation maps to obtain an ecological overview of portions of the San Juan Mountains. This effort was in conjunction with the San Juan Ecology Project, funded by the Bureau of Reclamation Contract No. 14-06-D-7052. The accuracy and time efficiency of photointerpretating these areas has been improved by using color infrared (CIR) film from NASA aircraft coverage. Boundary delimitations are transferred from CIR to Hurd quadrangle centered B/W photography. This facilitates the ease of transfer to the U.S.G.S. quadrangle base map (Fig. 1).

Projection of INSTAAR activity was discussed during a LARS personnel visit on December 6, 1973. The decision was made to continue base map preparation due to alterations of the Milestone Plan caused by the delay in receiving the SKYLAB data.

B. Recommendations

Additional funding for supporting the computer system may be requested. Currently funds are available from an SR & T contract but this contract terminates on May 31, 1974. This situation should be jointly discussed by NASA and LARS personnel.

C. Expected Accomplishments

During January the analysis of the Moccasin Mesa burn should be completed showing the boundaries of the burn, severity levels, and unburned areas. Acreage figures will be computed for each class and an accuracy level assigned. Upon receipt of the S192 tapes a comparison of the ERTS classification will be made with a SKYLAB classification of the same area.

D. There are no author identified significant results in this report.

E. There were no contract funds spent for travel during this period.

VEGETATION MAPPING METHODOLOGY

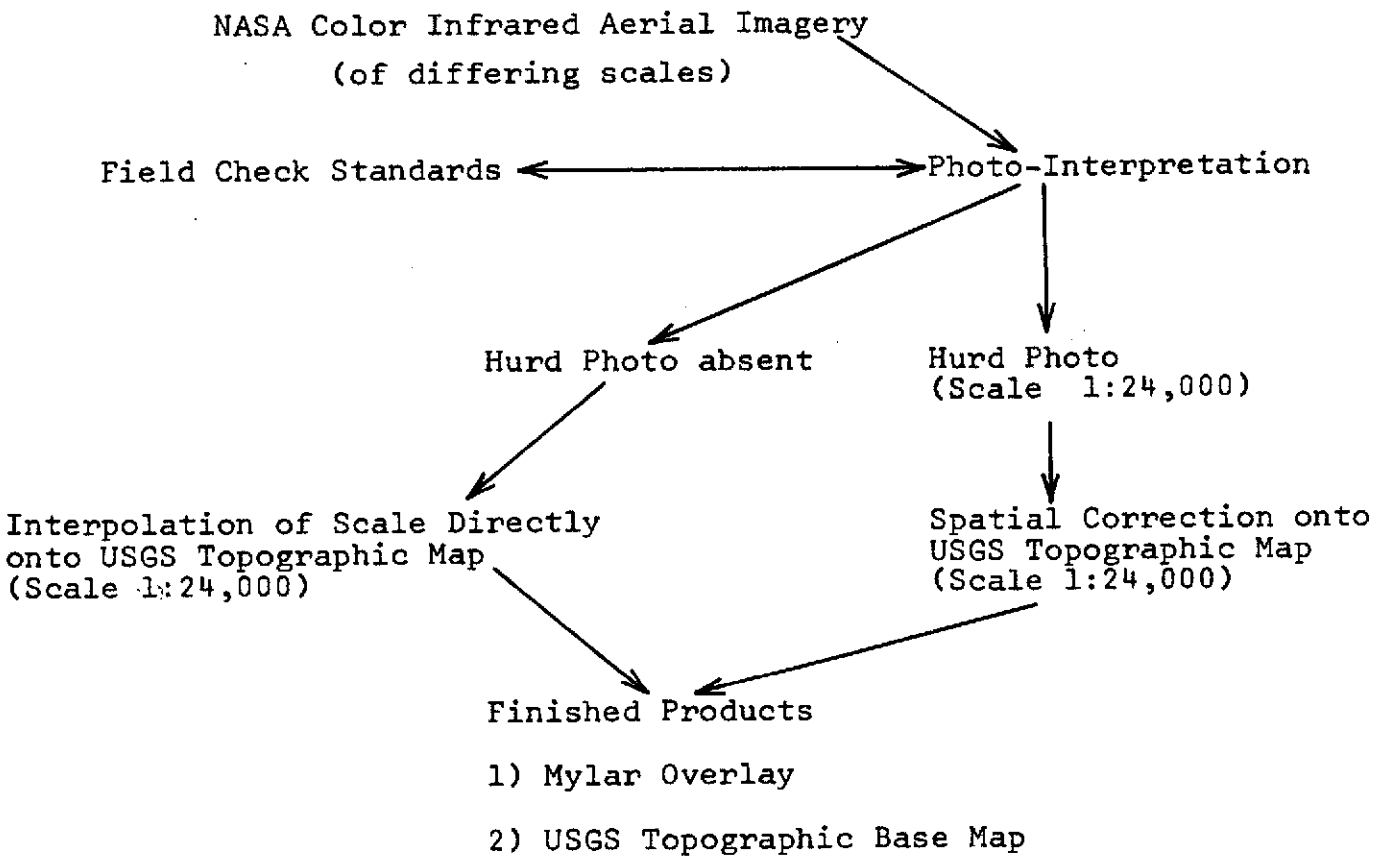

Figure 1. Steps in vegetation mapping procedures.